

1 **PATENT APPLICATION**

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3 **TITLE: CONTAINER TRANSPORTING DEVICE**

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9 **SPECIFICATION**

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11 **BACKGROUND**

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13 Today, water containers that provide fresh water are utilized in many homes and
14 businesses in the United States. Because the weight of a container increases substantially when it
15 is filled with water, it is a difficult task to transport the container without some type of support.
16 What is needed for these water containers is a simple and easy mechanism for lifting and
17 transporting.

18 There are several patented mechanical apparatus that provide the capability to transport
19 water containers such as US Patent No, 5,372,470 which discloses a manually movable lift truck
20 for transporting containers and US Patent No, 5,406,996 which discloses an apparatus to transport
21 and place a water bottle onto a water dispenser.

22 However, the present invention allows the transportation of a container such as a 5 gallon
23 container without lifting and bending and has a simple construction.

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26 **SUMMARY**

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28 The present invention provides for a utility hand cart for transporting large water
29 containers or other such compatible containers. The containers can range in size from five to
30 eight gallon. The utility cart provided allows the container to be loaded onto the cart without
31 bending or using physical force. The utility cart includes a base frame, an elongated bar, a hand
32 assembly, and an arm structure. The elongated bar is attached to the base frame. The handle
33 assembly is attached to the upper end of the elongated bar and provides the capability of steering
34 and maneuvering the utility cart. The arm structure is mounted on the exterior surface of the
35 elongated bar. The present invention includes a means for loading the container onto the base

1 frame and a catch mechanism integrated into the arm structure for engaging the top of the
2 container.

4 BRIEF DESCRIPTION OF DRAWINGS

5 The drawings and the accompanying description illustrate the present invention.

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7 FIG. 1 is a perspective side view of one embodiment of the present invention a handcart
8 for transporting water containers.

9 FIG. 1A illustrates a rear view of one embodiment of the present invention a hand cart for
10 transporting water containers.

11 FIG. 2 illustrates an exploded view of the handcart holding the water container.

12 FIG. 3 illustrates a cross-sectional side view of the handcart.

13 FIG. 3A illustrates a cross-sectional back view of the handcart.

14 FIG. 4 illustrates an exploded view of the underside portion of the arm structure of the
15 handcart.

16 FIG. 5-5C illustrates an alternative embodiment of the present invention, the handcart
17 utilizing a spring arch.

18 FIG. 6-6A illustrates an alternative embodiment for the elongated bar member.

19 FIG. 8A-8D illustrates an alternative embodiment of the present invention, the handcart
20 utilizing a second type of spring arch connection.

21 FIG. 7A-7B illustrates an alternative embodiment of the present invention, the handcart
22 utilizing a hook.

DETAILED SPECIFICATION

Referring to FIG. 1, there is shown a perspective side view of hand cart (100) according to the present invention. The present invention includes a base frame (110) that is supported by at least one wheel means (115) for movement. In the illustrated embodiment, the base frame (110) is supported by two conventional wheels (113, 114). The hand cart can be made of rigid metal such as aluminum, steel, hard plastic or another such suitable material. As illustrated, base frame (110) further includes an integrated rigid vertical plate member (120) and a rigid horizontal plate member (125). The horizontal plate member (125) is aligned perpendicular to the vertical plate member (120). Conventional wheel means (113, 114) are respectively mounted upon opposite ends of vertical plate member (120) to support the movement of handcart (100). As shown, the conventional wheels (113, 114) are securely fastened to the vertical plate member via screw bolts as illustrated in FIG. 1A. In alternative embodiments of the present invention, as shown in FIG 6A and 6B, wheel means (113, 114) are situated on opposite ends of an axle (115) that runs through the bottom of the elongated bar member (150).

Referring to the illustrated embodiment in FIG. 2, there is shown an exploded view of the base frame (110) supporting a container (142). As illustrated the present invention further includes a cradle (140) supported by the base frame (110). In the specific illustrated embodiment, the cradle (140) is dimensioned to fit the bottom of the container (142). Cradle (140) has an arc shape dimensioned to fit the circular shape of the bottom of the container (142) shown in FIG. 2. However, in other specific embodiments, where the bottom of the container is polygonal or elliptical, the cradle (140) can be dimensioned to engage the bottom of these types of containers.

1 The cradle (140) is supported by the horizontal plate member (125) and securely fastened at its
2 midpoint to the vertical plate member (120). In the illustrated embodiment screw bolts are used
3 to secure the cradle (140) to the vertical plate member (120) of the base frame (110). In another
4 embodiment of the present invention, as shown in FIG. 6A and 6B, the vertical plate member is
5 eliminated. In this kind of embodiment, the cradle (140) is supported by the horizontal plate
6 member (125) and attaches directly to the elongated bar member (150).

7 Referring back to FIG. 1, the illustrated embodiment further includes an elongated bar
8 member (150) defined by an upper end (155) and a lower end (160). The lower end (160) is
9 securely fastened to the backside of the vertical plate member (120) of base frame (110), as
10 shown in FIG. 1A.

11 Referring to FIG. 3, there is shown an exploded cross-sectional view of handcart (100). In
12 the illustrated embodiment, the elongated bar member (150) is hollow and has essentially a
13 rectangular shape. In an alternative embodiment of the present invention as shown in FIG. 6A, the
14 elongated bar member (150) can be formed from a solid sheet of metal. In this kind of
15 embodiment, the sheet of metal is bent backward along its vertical edges (151) to form a casing
16 with an opened back.

17 The illustrated embodiment in FIG. 1, further includes handle assembly (156) to provide
18 the capability of steering and maneuvering the hand-cart (100). Handle assembly (156) further
19 includes parallel spaced apart support members (161, 162) having their upper ends connected to
20 grip member (165) and their lower ends securely mounted upon the lower end (160) of bar
21 member (150). As shown, the parallel support members (161, 162) are securely fastened to the
22 lower end (160) of bar member (150) at each opposite side. In the illustrated embodiment, bolt
23 screws securely fastened the support members (161, 162) to the bar member (150). However,

1 other suitable fastening means can be utilized. The handle assembly (156) provides the capability
2 of moving the handcart in a forward and backward position on the conventional axis of the wheel
3 means (113, 114).

4 In the illustrated embodiment in FIG. 3A, handcart (100) further includes an arm structure
5 (200) being mounted upon the exterior of the bar member (150). Arm structure (200) is adapted
6 to be partially slidably through slot opening (210) located on the exterior of bar member (150).
7 Additionally, arm structure (200) is mounted on the exterior of bar member (150) at an
8 intermediate point. This intermediate point is determined in relation to the height of the container
9 as the container sits upright upon the base frame. As shown, arm structure (200) extends
10 outwardly along its horizontal axis and is essentially a polygonal shape, specifically rectangular.
11 In yet other embodiments of the present invention, the shape of the arm structure (200) can be
12 adjusted to meet design implementation of the various types of containers.

13 Referring to FIG. 4, there is shown an exploded view of arm structure (200). In the
14 illustrated embodiment, arm structure (200) is further defined by a first edge (431), an opposite
15 second edge (433), and an underside portion (220). Bumper mechanism (225) is situated at the
16 first end (431) of arm structure (200). As shown bumper mechanism (225) has a curved groove
17 (230) dimensioned to fit the curvature of the neck of the container. In an alternative embodiment,
18 the bumper mechanism can be the straight opposite second edge (433). The underside portion
19 (220) is adapted to receive the top of neck (235) of the container. The underside portion (220)
20 further includes catch mechanism (240) situated within the underside portion (220). In the
21 illustrated embodiment, catch mechanism (240) is dimensioned to accommodate the dimensions
22 of the top of neck (235). As shown, catch mechanism (240) further includes a recess (245) in the
23 underside portion (220). In the illustrated embodiment, recess (245) has a polygonal shape

1 equivalent to the shape and dimensions of the top of the neck of the illustrated container.
2 Additionally, recess (245) is situated from the far end of the arm structure (200) wherein the top
3 of the container can be aligned directly underneath the recess (245) when the container is in an
4 upright position on the base frame. In alternative embodiments, the catch mechanism (240) can
5 be a mechanical device situated within the underside portion and can be adapted to engage the top
6 of various styles of containers. In even more specific embodiments, recess (245) can be adapted to
7 fit various styles of containers. In other embodiments of the present invention, as shown in FIG.
8 5, the catch mechanism (240) can be an orifice through the arm structure (200) having dimensions
9 to accommodate the diameter of the top of the container.

10 The present invention further includes a means for raising and lowering the arm structure
11 (200) such that catch mechanism (240) in the underside portion (220) can securely engage the top
12 of the container. In the illustrated embodiment, a lever mechanism (350) is provided that is
13 situated at the upper end of the bar member (150). Lever mechanism (350) is operably connected
14 through the interior of the bar member (150) to the arm structure (200). The lever mechanism
15 (350) connection allows the arm structure (200) to be vertically lifted and lowered such that the
16 catch mechanism (240) can engage the top of the neck of the container. As illustrated in the
17 alternative embodiment in FIG. 6A, the lever mechanism can be situated internally within the
18 casing of the elongated bar member (150).

19 Referring to Fig.'s 3 and 3A, there is shown one embodiment of the lever mechanism
20 (350) connection. In the illustrated embodiment in FIG 3A, arm structure further includes its rear
21 end (250) mounted to a carriage block (300) through a small slot opening (210) located on the
22 exterior of bar member (150). Carriage block (410) is rectangular in shape and is dimensioned to
23 fit within bar member (150). The illustrated embodiment further includes rod member (400)

1 interconnecting lever mechanism (350) to carriage block (410). At the lower end of bar member
2 (150) is a second stationary block (410). Spring member (420) interconnects the carriage block
3 (410) and the stationary block (410) such that when lever mechanism (350) is pulled up the arm
4 structure (250) can be raised. Additionally, when the lever mechanism (350) is released, the arm
5 structure (250) is lowered to allow the catch mechanism (240) to engage the top of the container.
6 The slot opening (210) provides the maximum distance the arm structure (200) can be raised and
7 lowered. In alternative embodiments, the lever mechanism (350) can be implemented utilizing
8 mechanical pulley systems.

9 In other embodiments of the present invention, carriage block (410) and (440) can be
10 eliminated. In this kind of embodiment as shown in FIG. 6A and 6B, the rod member (400) and
11 the spring member (420) are each respectively attached to screws (401, 402) that horizontally
12 secure arm (200) to the bar member (150).

13 In the alternative embodiment of the present invention, as shown in FIG. 5A and 5C, the
14 arm structure (200) can be raised and lowered to at least a thirty-degree angle utilizing a spring-
15 arch method. In this kind of embodiment, the first edge (431) of arm structure (200) is hingedly
16 connected to the exterior of the elongated bar (150) at an intermediate point. In this alternative
17 embodiment, the arm structure (200) is pivoted upward along a thirty-degree angle path as the
18 cradle engages the bottom of the container. Then, the arm structure (200) is lowered along the
19 same thirty-degree angle path allowing the catch mechanism (240) to engage the top of the
20 container. The arm structure (200) is connected to the elongated bar member (150) through a
21 spring-loaded hinge (430) which allows the arm structure (200) to remain in a down position with
22 the catch mechanism (240) situated within the arm structure (200) securely engaging the top of

1 the container. In the illustrated embodiment, the catch mechanism (240) can be the orifice
2 illustrated in FIG. 5 or the recess (245) illustrated in FIG. 4.

3 In the embodiment illustrated in FIG. 6, lever mechanism (350) further comprises a solid
4 rod (400) which is situated internally within the elongated bar (150). Rod (400) is held in place
5 by special hardware, which allows the rod (400) to slide up and down. Additionally, rod (400) is
6 connected to first edge (431) of the arm structure (200) such that lever (350) can be pushed
7 downward to raise the arm structure (200) and disengage the catch mechanism (240) as illustrated
8 in FIG. 5A.

9 In yet another alternative embodiment as shown in FIG. 5B and 5C, lever mechanism
10 (350) can be connected to a foot bar (355). In this illustrated embodiment, a cable (360) connects
11 foot bar (355) to first edge (431) of the arm structure (200). When the foot bar (355) is depressed,
12 the arm structure (200) is raised upward disengaging the catch mechanism (240). When the foot
13 bar (355) is released, the arm structure (200) is lowered to securely engage the catch mechanism
14 (240) with the top of the container.

15 In FIG.'s 8A-8D, there is shown an alternative embodiment of the present invention
16 utilizing the spring arch method. In this illustrated embodiment in FIG. 8A, lever mechanism
17 (350) is located at the upper end of elongated bar member (150) and is operably connected at an
18 intermediate point (476) to the upper surface of arm structure (200). The first edge (201) of arm
19 structure (200) is hingedly connected to the exterior of elongated bar member (150). In the
20 shown embodiment, cable (480) is connected to arm structure (200) at the intermediate point
21 (476) such that when lever mechanism (350) is pulled upward cable (475) raises arm structure
22 (200) upward. As shown in FIG. 8B, when lever mechanism (350) is pulled upward, the arm
23 structure (200) is raised to at least a thirty degree angle path to disengage catch mechanism (240).

1 In another alternative embodiment of the present invention, as shown in FIG. 7 and 7A,
2 the arm structure (200) is rotated to at least thirty-degree angle to engage and disengage the catch
3 mechanism (240). In the illustrated embodiment, first edge (431) of the arm structure (200) is
4 rotably connected to the exterior of horizontal bar member (150) at an intermediate point. Arm
5 structure (200) further includes a U-shaped hook catch mechanism (240) with dimensions to
6 accommodate the diameter of the neck of the container. The U-shape hook catch mechanism
7 (240) extends laterally from a side edge of the arm structure (200) to an intermediate position. In
8 this kind of embodiment, the arm structure (200) is rotated clockwise thirty degrees to allow the
9 bottom of the container to slide on the base frame and the cradle to engage the bottom of the
10 container. To engage the catch mechanism (240) the arm structure (200) is rotated back
11 counterclockwise along the same path to allow the catch mechanism (240) to engage the neck of
12 the container (275). In the illustrated embodiment, elongated bar member (150) is cylindrical in
13 shape. In this kind of embodiment elongated member (150) can be made from cylindrical PVC
14 pipe as shown in FIG. 7 and 7A.

15 Operationally, place the hand-cart in an upright position with the cradle aligned with the
16 bottom of the container. With the bar member perpendicular to the floor and parallel to the
17 container with the arm structure aligned perpendicular to the top of the container, place one hand
18 on the hand assembly and place the corresponding foot at the bottom of the elongated bar against
19 its rear side. The handle assembly is moved forward such that the bumper mechanism of the arm
20 structure contacts the side of the neck of the container and forces the bottom of the container to
21 slightly lift at a small degree angle from the surface level. Simultaneously, the base frame is
22 pushed forward with the foot allowing the horizontal plate member of the base frame to slide
23 underneath the bottom of the container. As the horizontal plate member is slid underneath the
24 bottom of the container, the arc of the cradle engages the bottom of the container. The lever
25 mechanism is pulled upward causing the arm structure to partially slide upward. The lever
26 mechanism is then released which causes the arm structure to slide downward and the catch

1 mechanism to engage the top of the container. In an alternative embodiment of the present
2 invention, the lever mechanism is pulled upward causing the arm to be raised along at least a
3 thirty-degree angle path. After the arm structure is raised, the handcart is moved into an upright
4 position aligning the neck of the container directly underneath the catch mechanism. When the
5 lever mechanism is released, the catch mechanism in the arm structure engages the top of the neck
6 of the container. In another embodiment of the present invention, the arm structure is rotated
7 clockwise at least thirty degrees to allow the container to be placed upon the bottom of the
8 container. The arm structure is then rotated back to allow the catch mechanism to engage the
9 neck of the container. After the container is securely placed upon the base frame, the container
10 can then be transported to its desired location. The major advantage of utilizing the handcart is
11 that to place the container on the handcart, a person does not have to bend or utilize any physical
12 force.